

## Short Communication

# TO ASSESS THE EFFECT OF SMOKING, PASSIVE SMOKING & SOCIOECONOMIC STATUS ON THE DEVELOPMENT OF TB IN PATIENTS OF DHQ HOSPITAL FSD

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## ABSTRACT

Objective of the study was to assess the effect of smoking, passive smoking and socioeconomic status on the development of active pulmonary tuberculosis (PTB)

This is a Descriptive cross sectional study, which was conducted at DHQ hospital Faisalabad in May, 2012. Thirty patients of tuberculosis from DHQ hospital were included in the study by filling of questionnaire.

Out of these, 70% were smokers and 20% were passive smokers and only 10% were non-smokers. Most of the smokers had been smoking for more than 10 years. 70% of the patients were belonging to low socioeconomic status. 23.33% had a view that smoking is a causative factor in their TB and 76.66% were against it. In conclusion, exposure to tobacco smoke, either active or passive, was associated with an increased risk of developing pulmonary tuberculosis immediately following infection. This is an association of great concern requiring health education programs and anti-tobacco medical advice.

**Key words:** smoking, passive smoking, socioeconomic status, tuberculosis, DHQ hospital

Tuberculosis is a chronic infectious disease caused by Mycobacterium Tuberculosis. Currently tuberculosis is the leading cause of mortality among infectious diseases worldwide and almost 95% of TB cases and 98% of deaths due to TB occur in developing countries. Due to inadequacy of disease surveillance in Pakistan,<sup>1, 2</sup> it is not possible to present exact data for TB incidence and TB related mortality.

Tuberculosis causes a great deal of ill health and an enormous burden on the populations of most low income countries. TB is an increasing health problem in Pakistan. Pakistan ranks sixth among countries with a high TB burden. Prevalence of TB in Pakistan is 420,000 and incidence is 231 per 100,000 populations.

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The function of pulmonary alveolar macrophages is impaired by smoking which plays an important role in early defense mechanisms against bacteria<sup>3</sup>. Recent work has suggested a mechanism; nicotine is hypothesized to act directly on nicotine receptors on macrophages to decrease intracellular TNF, and thus impairs intracellular killing of MTB<sup>4</sup>. Complications such as cancer, cardio vascular complications and infection are related to amount of cigarette smoke which is expressed in pack-year. These complications are more prevalent in heavy smokers<sup>5</sup>.

In 1993 WHO declared a state of global emergency against Tuberculosis<sup>6</sup>, due to steady increase of this disease. When an individual has been infected with Mycobacterium tuberculosis, the risk for developing the disease is related to a number of constitutional and environmental factors like smoking, passive smoking, low socioeconomic status and some other

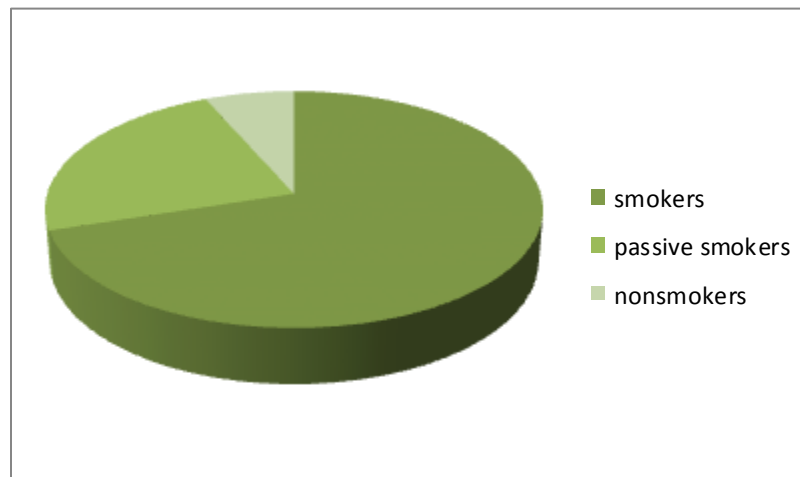
unknown factors<sup>7, 8</sup>. Large prospective epidemiologic studies have shown a strong association between cigarette smoking and several cardiovascular and pulmonary diseases, in particular COPD and lung cancer in adults<sup>9</sup>. The harmful effects of passive exposure to tobacco smoke experienced by nonsmokers, either adults or children, have also been documented.<sup>10</sup> Smoking has been shown as a risk factor for tuberculosis in adulthood.<sup>11, 12</sup> Recently, it is demonstrated that cigarette smoking is associated with

development of active pulmonary tuberculosis in youth.<sup>13</sup>

Based on the results of surveys, Pakistan has been ranked as one of the top 22 developing countries afflicted by current TB epidemics (World Health Organization 2001 data). High risk groups for MTB infection in Pakistan, like other developing countries may include people with smoking.

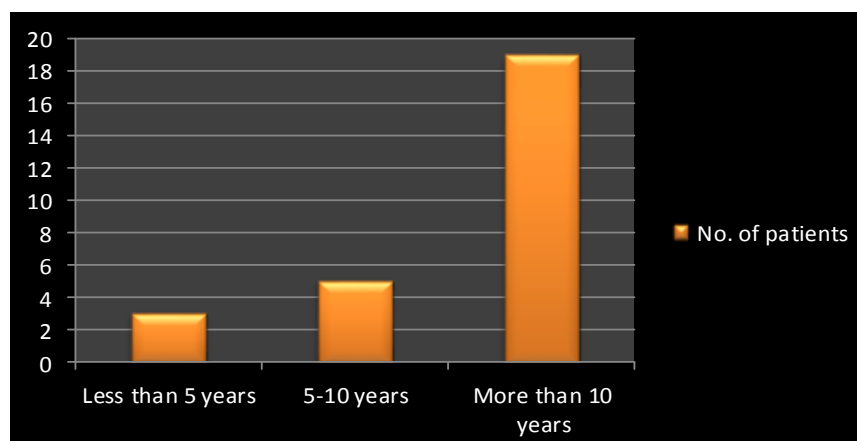
The purpose of our study is to investigate the influence of smoking, passive smoking, and socio-economic status on the development of active pulmonary tuberculosis.

**Fig: 1 Relationship between smokers and non-smokers among TB patients**

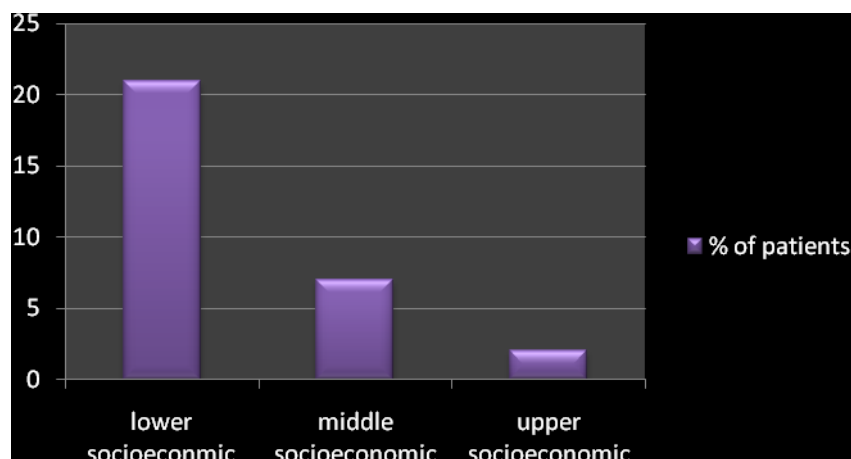


This is a pie chart showing 70 % of the TB patients were smokers and 30 % were nonsmokers.

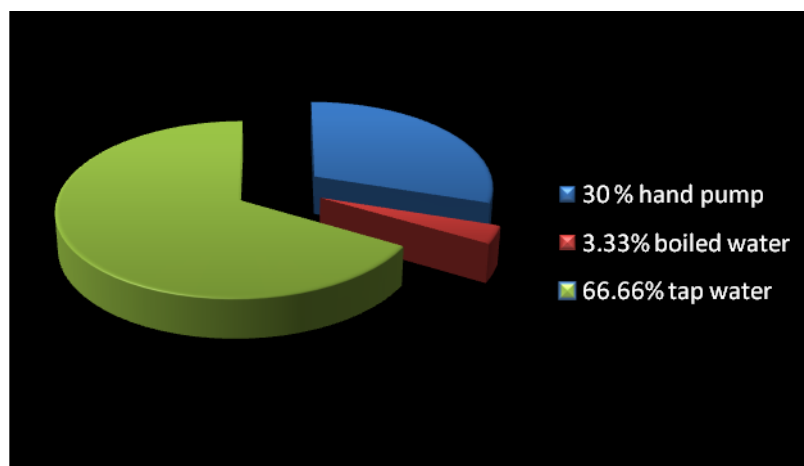
**Fig: 2 Duration of smoking in context with patients of TB.**



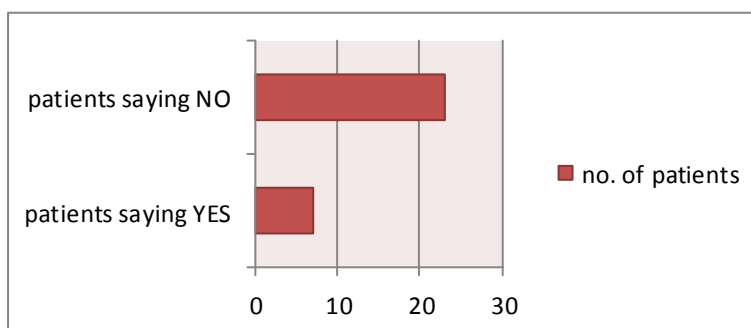
This is a bar chart showing duration of smoking of TB patients. Among 30 patients, 27 were smokers or passive smokers and 3 were nonsmokers. The bar chart shows the duration of smoking among the smokers.

**Fig: 3 Percentage of TB patients belonging to different socioeconomic status**

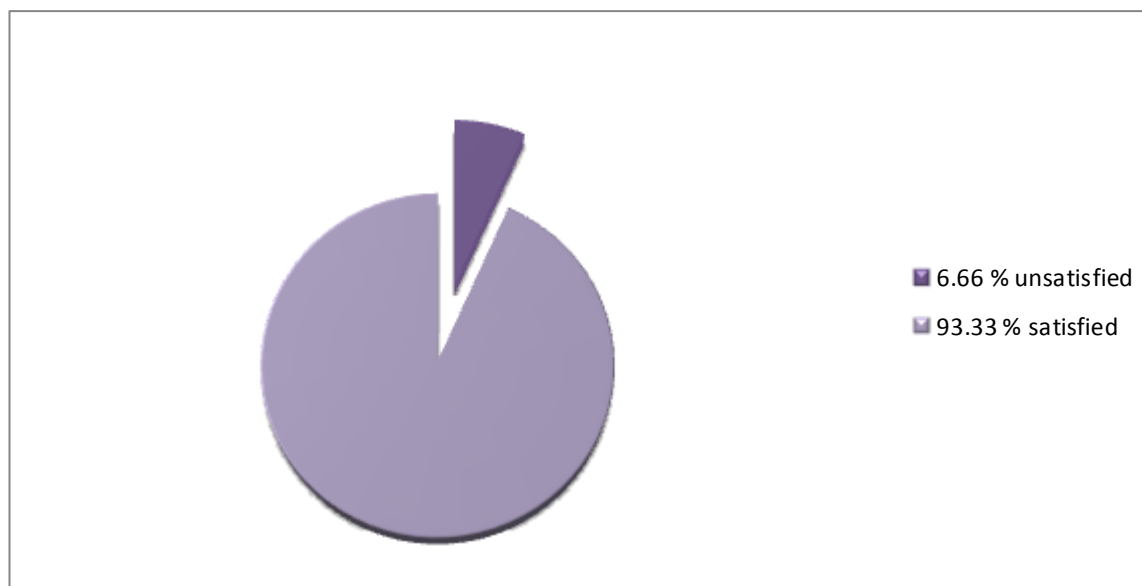
Among the sample size of 30 patients of TB, 21 were belonging to lower class, 7 to middle class and 2 to upper class.

**Fig: 4 Assessment of hygiene among tuberculosis patients**

Among the sample size of 30 TB patients, 1 was using boiled water, 9 were using hand pump, and 20 were using tap water.

**Fig: 5 Patients views about causal relationship of smoking and TB**

Among the sample of 30 patients, 7 patients had a view that smoking was a causative factor in their TB and 23 were against it.

**Fig: 6 % of TB patients satisfied with DOT therapy at DHQ Hospital Faisalabad**

Among 30 TB patients 93.33% were satisfied with the therapy provided and 6.66%

## DISCUSSION:

There are a number of risk factors for tuberculosis including smoking, passive smoking and socio economic status. It is well known that only 10-15% of persons infected with *M. tuberculosis* develop the disease. The risk of becoming diseased is related to several factors,<sup>14</sup> smoking and passive smoking are a few of those. SES is closely related to tuberculosis.<sup>15</sup> Socio economic level is a potential confounding factor because, in addition to being a risk factor for tuberculosis, socioeconomic status is associated with cigarette smoking.<sup>16</sup> Smoking in particular heavy smoking has been associated with pulmonary tuberculosis, thus smoking and passive smoking could increase the risk of disease after remote infection. Our study was conducted at DHQ hospital Faisalabad. 30 patients were taken who had developed active tuberculosis. A questionnaire was provided to all the patients and results regarding different questions were recorded.

A comparison between the patients was done on smoking. Out of 30 patients, 3 patients

were non-smokers and 27 were smokers and among them few were passive smokers.

In context of duration of smoking in different tuberculosis patients, our data showed that duration of smoking is closely related to the development of active disease. Among 27 patients who were smokers 70.3% were chronic smokers with duration of smoking of more than 10 years. 18.5% had duration of smoking of 5-10 years and 11.1% were smoking for duration of less than 5 years.

To assess the socio economic status of the patients an index was formed which is given at the end of the document. Based on different questions regarding socio economic status of patients, it was found that among the sample size of 30 patients of tuberculosis, 21 were belonging to lower class, 7 to middle class and 2 patients were belonging to upper class, which shows that lower socio-economic status and hygienic conditions of the person also have some influence on the development of the disease.

On asking patients view about the causal relationship of smoking and their disease, only 30% had a view that smoking could be a

causative factor in the development of their disease and 70% were against it.

From this we can conclude that we need to increase awareness among the people about the hazardous effects of smoking and passive smoking. This goal can be easily achieved through health education and mass media campaigns.

Much data is in the support of the fact that there is strong association between tobacco smoke and tuberculosis. The development of tuberculosis is linked to an alteration in the immune response,<sup>17</sup> tobacco smoke causes an alteration in CD4+ and macrophage / monocyte immune responses.<sup>18</sup> The relevance of smoking, passive smoking and tuberculosis has been emphasized in many studies.<sup>9,19,20</sup> Our data shows a significantly higher percentage of active smokers who in later stages of their life developed tuberculosis.

The results of our study show that exposure to tobacco smoke (either active or passive) was associated with an increase risk of developing active tuberculosis. Our data show a significant higher percentage of active smokers which may account for a stronger association between smoking and tuberculosis. 70% of the patients, which were

included in the research and had active tuberculosis, were smokers or were passively exposed to tobacco smoke and most of them had a smoking exposure of more than 10 years which shows that exposure to tobacco, a long exposure in particular are a risk factor for the development of the disease. A review of the socio-economic status revealed that low socio-economic status was associated with increased smoking. So in addition to being a risk factor it is a confounding factor for the development of the disease.

## CONCLUSION:

The study showed that there is high frequency of tobacco exposure, either active or passive in tuberculosis patients of DHQ hospital, most of them were chronic smokers and were belonging to a lower socio-economic status. Thus cigarette smoking is an important risk factor for tuberculosis and further studies are needed regarding the risks of the disease. Health education programmes, anti-tobacco campaigns, and medical advice given to people can benefit health of community and prevent some pulmonary tuberculosis cases.

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If I die in this condition that I have strived to earn an honest living then it is more beloved to me than even dying as a Martyr.

**Hazrat Umar**  
(Razi Allah Tala Anho)